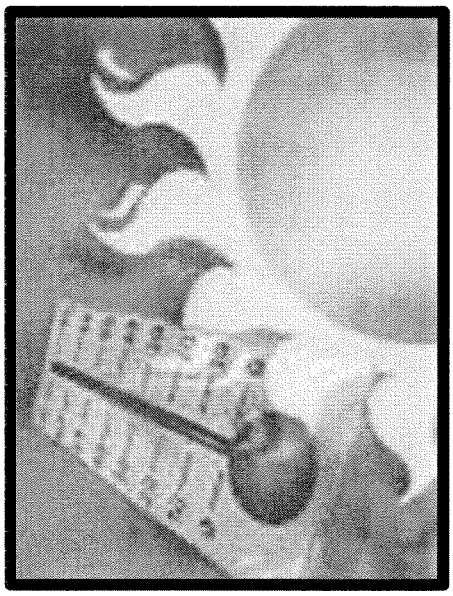
UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

STEPHEN McCOLLUM, and SANDRA McCOLLUM, individually, and STEPHANIE KINGREY, individually and as independent administrator of the Estate of LARRY GENE McCOLLUM, PLAINTIFFS	§	
v.	§	CIVIL ACTION NO. 4:14-cv-3253 JURY DEMAND
BRAD LIVINGSTON, JEFF PRINGLE, RICHARD CLARK, KAREN TATE, SANDREA SANDERS, ROBERT EASON, the UNIVERSITY OF TEXAS MEDICAL BRANCH and the TEXAS DEPARTMENT OF CRIMINAL JUSTICE. DEFENDANTS	§	

Plaintiffs' Consolidated Summary Judgment Response Appendix

EXHIBIT 115

Heat Related Illness



Objectives

- Identify types of heat related illness and associated signs and symptoms
- Describe treatment of heat related illness
- Discuss risk factors for heat related illness
- Review CMC policies and procedures for managing heat related illness

Types of Heat Related Illness

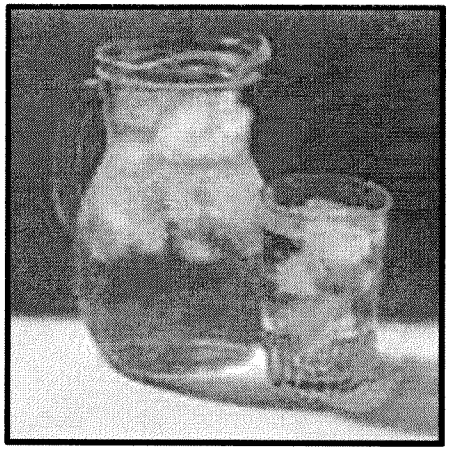
- Heat cramps
- Heat exhaustion
- Heat stroke

Heat Cramps

- Usually develop following strenuous exercise
  - Typically after several hours of work
- Caused by inadequate replacement of electrolytes (sodium and potassium)
- Signs and symptoms
  - Brief, intermittent cramping

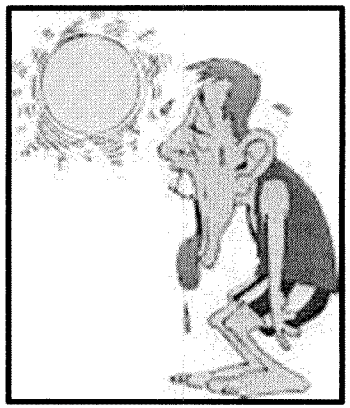
Treating Heat Cramps

- Rest in a cool location
- Replacement of fluids and electrolytes
  - Drink cool, caffeine-free fluids
  - Eat a meal



Heat Exhaustion

- Most common form of heat related illness
- Caused by depletion of water and salt
- Signs and symptoms
  - –Weakness
  - –Anxiety
  - –Fatigue
  - –Thirst
  - –Dizziness
  - –Headache
  - –Profuse perspiration
  - –Urge to defecate
  - –Nausea
  - –Rapid pulse
  - –Incoordination
  - –Confusion



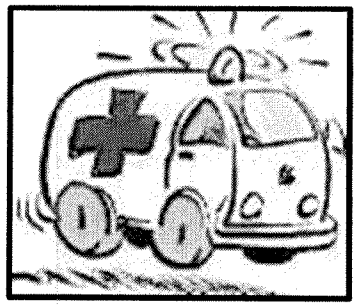
Heat Exhaustion Complications

- **Heat syncope can result from heat exhaustion**
  - **Signs and symptoms**
    - **Cool, clammy skin that is ashen gray in color**
    - **Sudden collapse may occur, and is usually of brief duration**
- **If left untreated, heat exhaustion may progress to heat stroke**

Treating Heat Exhaustion

- Move to a cool environment
- Lie down, remove shirt and shoes, and begin oral rehydration
- Severe cases may require IV rehydration

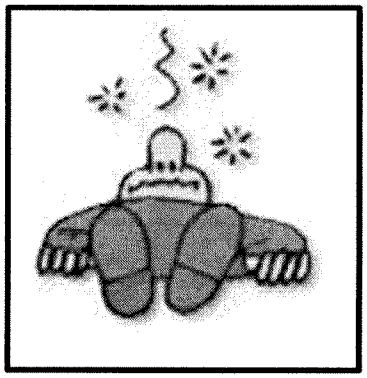
Heat Stroke



- Medical emergency
  - Body temperature may be > 106°F
- Often sudden in onset
  - May be preceded by signs of heat exhaustion
- Types of heat stroke
  - Exertional heat stroke
  - Classical heat stroke
- Shock and death may occur in either type of heat stroke

Heat Stroke

- **Exertional heat stroke**
  - **Occurs in young healthy people who do not maintain adequate fluid intake during exertion**
  - **Signs and symptoms**
    - **Headache**
    - **Chills, gooseflesh**
    - **Weakness**
    - **Incoordination**
    - **Nausea, vomiting**
    - **Unconsciousness**

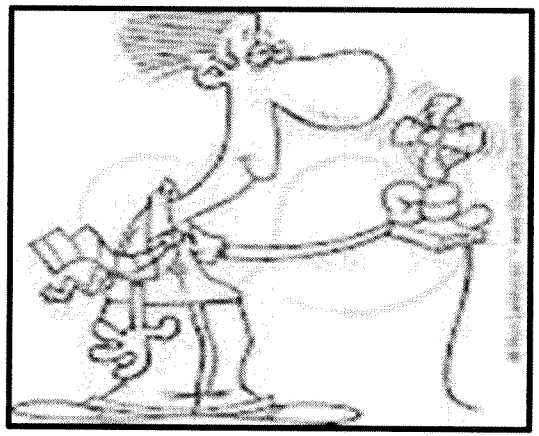


Heat Stroke

- **Classical heat stroke**
  - **Occurs in the elderly, those with predisposing medical conditions, and those on medications which cause fluid depletion, interfere with sweating, or interfere with the body's thermoregulatory system**
  - **Signs and symptoms**
    - **Hot, dry skin**
    - **Rapid, weak pulse**

Treatment of Heat Stroke

- **Medical emergency requiring immediate attention**
- **Patient *must* be:**
  - **Removed to a cool, air-conditioned place**
  - **Stripped and cooled rapidly using a water spray and cooling fans**

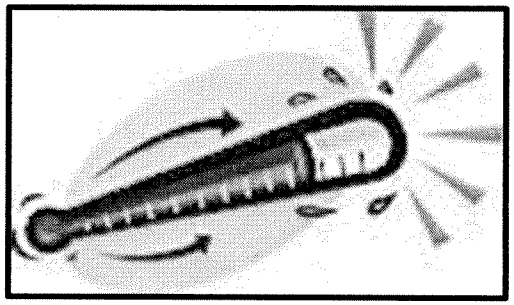


Preventing Heat Related Illness

- Ample fluid intake during and after work
- Salting of food during meals if not on a salt-restricted diet for medical reasons
- Proper work-rest cycles
- Use of electrolyte-replacement drinks or lightly salted fruit drinks at work site
- Excluding high risk people from working under conditions of extreme heat and humidity

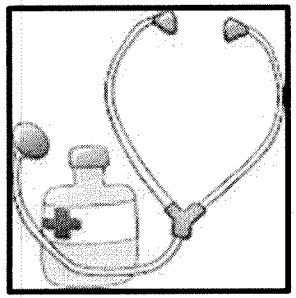
Risk Factors for Heat Related Illness

- Failure to maintain adequate fluid intake during exertion
- Underlying medical conditions
- Use of certain medications



High Risk Medical Conditions

- Cardiovascular disease
- Cirrhosis of the liver
- Chronic obstructive pulmonary disease
- Asthma
- Cystic fibrosis
- Diabetes
- Psychiatric conditions
- Sjogren's syndrome
- Sweat gland dysfunction
- Thyroid dysfunction
- Age > 65

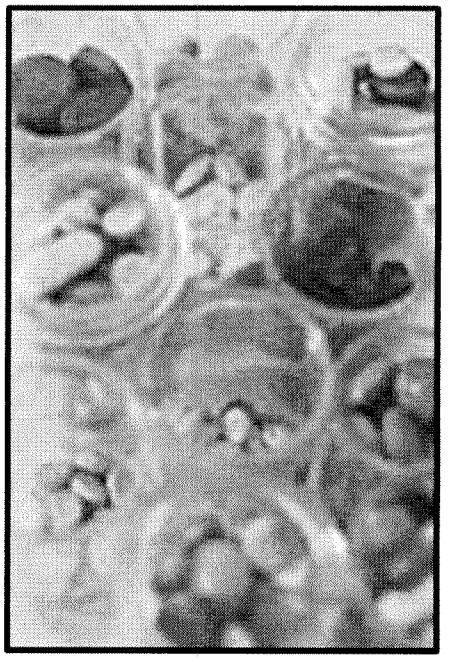


High Risk Medications

- **Anhidrotics: drugs that inhibit perspiration**
- **Poikilothermics: drugs that disrupt the body's normal temperature regulating mechanisms**
- **Potentiators: drugs that potentiate the effects of anhidrotics or poikilothermics**
- **Photosensitizers: drugs that increase the risk of sunburn when exposed to sunlight**

Anhidrotic Medications

- **Anticonvulsants:**
  - Topiramate (Topamax®)
- **Anticholinergics:**
  - Benztropine (Cogentin®)
  - Hyoscyamine (Levbid®)
  - Oxybutynin (Ditropan®)
  - Trihexyphenidyl (Artane®)
- **Antidepressants:**
  - Nortriptyline (Pamelor®)



Anhidrotics: drugs that inhibit perspiration

Poikilothermic Medications

Antihistamines:

- Cyproheptadine (Periactin®)
- Diphenhydramine (Benadryl®)
- Hydroxyzine (Atarax®)
- Promethazine (Phenergan®)

ALL antipsychotic medications

Beta blockers:

- Atenolol (Tenormin®)*
- Metoprolol (Lopressor®)*
- Propranolol (Inderal®)*

Diuretics:

- Furosemide (Lasix®)*
- Hydrochlorothiazide (Hydrodiuril®)*

*Also a potentiator medication

Poikilothermics: drugs that disrupt the body's normal temperature regulating mechanisms

Photosensitizing Medications

***Drugs with > 1% incidence:**
special precautions *may* be considered

Cardiovascular
- Amiodarone (Pacerone®)

Antimicrobials
- Quinolone antibiotics
- Sulfonamide antibiotics
- Tetracycline antibiotics

Antipsychotics
- Phenothiazines
- Risperidone (Risperdal®)
- Ziprasidone (Geodon®)

Hypoglycemics
- Glipizide (Glucotrol®)
- Glyburide (Diabeta®)
- Glimepiride (Amaryl®)

Antineoplastics
- Dacarbazine
- Methotrexate

Anticonvulsants
- Lamotrigine (Lamictal®)

Diuretics
- Hydrochlorothiazide (Hydrodiuril®)

Miscellaneous
- Isotretinoin (Accutane®)
- Tretinoin (Retin-A®)
- Tacrolimus (Prograf®)
- Sulfasalazine (Azulfidine®)

Photosensitizers: drugs that increase the risk of sunburn when exposed to sunlight

Photosensitizing Medications

*Drugs with ≤ 1% incidence: special precautions not routinely advised

Antiretrovirals
- Ritonavir (Norvir®)
- Saquinavir (Invirase®)

Antimicrobials
- Azithromycin (Zithromax®)
- Cefazolin (Ancef®)
- Dapsone

Antifungals
- Griseofulvin
- Itraconazole (Sporanox®)

Antihypertensives
- Enalapril (Vasotec®)
- Nifedipine (Procardia®)
- Diltiazem (Cardizem®)
- Losartan (Cozaar®)
- All beta blockers

Diuretics
- Furosemide (Lasix®)
- Amiloride (Midamor®)
- Metolazone (Zaroxolyn®)
- Triamterene (Dyrenium®)

Other cardiovascular
- All statins
- Clopidogrel (Plavix®)
- Hydalazine (Apresoline®)

Anticonvulsants
- Carbamazepine (Tegretol®)
- Oxcarbazepine (Trileptal®)
- Gabapentin (Neurontin®)
- Pregabalin (Lyrica®)
- Topiramate (Topamax®)
- Valproic acid (Depakote®)

Photosensitizing Medications

***Drugs with ≤ 1% incidence:**
special precautions not routinely advised

Antihistamines

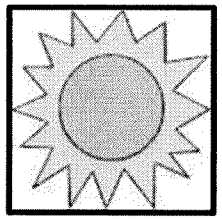
- Chlorpheniramine (Chlor-Trimeton®)
- Cyproheptadine (Periactin®)
- Diphenhydramine (Benadryl®)
- Hydroxyzine (Atarax®)
- Loratadine (Claritin®)

Antivirals

- Acyclovir (Zovirax®)
- Amantadine (Symmetrel®)

Antineoplastics

- Fluorouracil
- Procarbazine



Psychotropics

- Most antipsychotics
- Most antidepressants

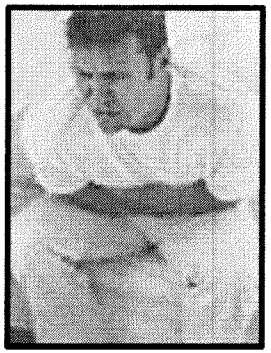
Miscellaneous

- Anti-tuberculars
- Anti-malarials
- Benzocaine (Americaine®)
- Oral contraceptives
- Omeprazole (Prilosec®)
- All NSAIDs
- Promethazine (Phenergan®)

Miscellaneous Medication Issues

Lithium toxicity

- Lithium is a mood stabilizer used in the treatment of bipolar disorder
- If an offender treated with lithium becomes dehydrated, they are at an increased risk of lithium toxicity
- Signs and symptoms
  - Nausea, vomiting, diarrhea
  - Sluggishness, confusion
  - Tremor
  - Seizures



- Immediate medical attention is required if lithium toxicity is suspected
- Offenders taking lithium should be encouraged to drink plenty of fluids when working in hot weather conditions

Medication Reports

- Facility staff may run a PHO414 report to identify at-risk patients and ensure the appropriate notations in the EMR are present
- To find the PHO414 report:
  - Go to CMCWEB
  - Click on Departments
  - Click on PRS Management
  - Scroll down to select PHO414 report
  - Reports may be run by therapeutic class numbers to include the majority of agents: 282800, 040404, 281608, 120804, 242400, 040492, 402800
  - Reports may be run by SCC number for miscellaneous agents not included in the therapeutic class report
    - Select link "Click here for list of SCC and Therapeutic Classes by medication name" to identify SCC numbers

Procedures

- **If the temperature is ≥ 85°F, the Heat and Humidity Index should be used to determine the apparent air temperature**

Relative Humidity	80°	85°	90°	95°	100°	105°	110°	115°	120°
0%	73	78	83	87	91	95	99	103	107
10%	75	80	85	90	95	100	105	111	116
20%	77	82	87	93	99	105	112	120	130
30%	78	84	90	96	104	113	123	135	148
40%	79	86	93	101	110	123	137	151	
50%	81	88	96	107	120	135	150		
60%	82	90	100	114	132	149			
70%	85	93	106	124	144				
80%	86	97	113	136					
90%	88	102	122						
100%	91	108							

Heat exhaustion possible

Heat stroke possible

Heat stroke imminent

Procedures

Acclimatization

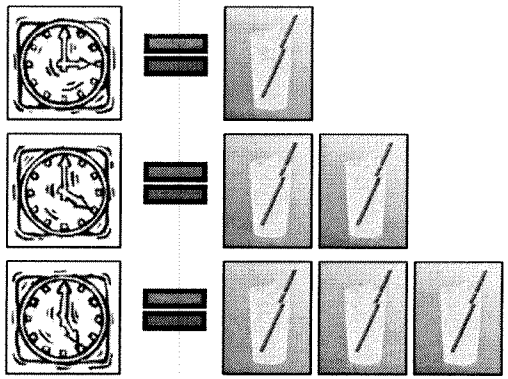
Offenders newly assigned to jobs which require strenuous work under conditions with an apparent air temperature ≥ 90° F *must* be acclimatized before assuming a full workload

- **Offenders should work no more than 3-4 hours at a time, separated by ≥ 1 hour rest in a cooler environment for the 1st week of work**
- **After the 1st week, they may assume a normal work schedule**
- **Acclimatization can be lost in as little as 2 weeks**
  - **Any offender away from a hot work environment for ≥ 2 weeks should be reacclimatized**
- **Acclimatization is not necessary for offenders assigned to the same job when temperatures vary with seasonal changes**

Procedures

Fluid intake

- Offenders working in an apparent air temperature ≥ 90°F should maintain an intake of at least 16oz of fluid per hour of work



- Under extreme conditions, work should be interrupted every 15-20 minutes and offenders instructed to drink fluids even if not thirsty
- Drinking water should always be available to workers in hot weather conditions

Procedures

Work-rest cycle

- **Workers should be given regular breaks based on the apparent air temperature**

Apparent air temp	Corresponding work-rest cycle
90 – 95°F	5-minute rest break every hour
96 – 120°F	5-minute rest break every 30 minutes with work intensity decreased by 1/3
> 120°F	Work stopped, or if it cannot be stopped, 10-minute rest break every 20 minutes with work intensity decreased by 1/2 to 2/3

Procedures

Offenders on medications

- Offenders on antipsychotic medications should not be allowed to work or recreate in environments where the apparent air temperature is ≥ 95°F
- This restriction may also apply to offenders on one or more anhidrotic, poikilothermic, or potentiator medication, and those who also have an underlying medical condition placing them at high risk
- Decisions about suitability of work assignments for these offenders will be made by facility medical staff and documented in the patient's record on the HSM-18
- The Infopac Report #IMS042 lists all offenders with heat sensitive medical restrictions

Procedures

Transportation

- Units are to refrain from transporting psychiatric inpatients to another facility via chain bus
- Any offender on the Infopac list should be transported during the coolest hours of the day
- Outgoing chain screens should be reviewed against the Infopac report to ensure offenders on medications travel via the appropriate mode of transportation

Procedures

Prevention and Treatment of Photosensitivity

- Workers will be provided and required to use clothing appropriate to the temperature and hazards imposed by sunburn
  - If available, light-weight, long-sleeved white shirts and brimmed hats may be used when working in direct sunlight
- Sunscreens with SPF ≥ 15 should be considered for offenders on photosensitizing medications
  - If used, they should be applied prior to and during work assignments
- Offenders with photosensitivity reactions may be treated with cool compresses acutely, and with emollients, topical steroids, and/or antihistamines as required in the chronic phase

For more information on heat related illness and photosensitivity, please refer to Correctional Managed Health Care Policies D-27.2 and D-27.3

Review Question 1

- **Which type of heat related illness is a medical emergency?**

  a) Heat cramps
  b) Heat stroke
  c) Sunburn
  d) Heat exhaustion

Review Question 2

- **Which of the following is *not* a risk factor for developing a heat related illness?**

  a) **Suffering from a common cold**
  b) **Failure to drink plenty of fluids while working**
  c) **Age > 65**
  d) **Taking a prescribed antipsychotic medication**

Review Question 3

- **Which of the following describes medications that inhibit perspiration?**

  a) **Photosensitizers**
  b) **Antihypertensives**
  c) **Poikilothermics**
  d) **Anhidrotics**

Review Question 4

- True or False. An offender needs to be reacclimatized if he is away from work for 4 weeks.

○ True
○ False

Review Question 5

- **What is the most common form of heat related illness?**

  a) **Heat cramps**
  b) **Heat exhaustion**
  c) **Heat stroke**
  d) **Dehydration**

Answers

1) B
2) A
3) D
4) T
5) B

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v.	§	CIVIL ACTION NO. 4:14-cv-3253 JURY DEMAND
BRAD LIVINGSTON, JEFF PRINGLE, RICHARD CLARK, KAREN TATE, SANDREA SANDERS, ROBERT EASON, the UNIVERSITY OF TEXAS MEDICAL BRANCH and the TEXAS DEPARTMENT OF CRIMINAL JUSTICE. DEFENDANTS	§	

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EXHIBIT 116

AD-10.64 (rev. 5), "Temperature Extremes in the TDCJ Workplace" Non-Concurrences

Jeff Baldwin, Chief of Staff:
Mr. Baldwin noted that for training documentation, requirements should be name/DOB, not name/SSN.

Resolution:
Incorporated, Mr. Baldwin concurs with the policy as written.

Dimitria Pope, RED Group:
Ms. Pope non-concurs with the entire policy. Ms. Pope believes there should not be a policy that is common sense.

Resolution:
No action taken. The proponent, although proper temperature management should be common sense, having specific guidelines for management and staff will enhance the TDCJ in correctly maintaining a consistent program throughout the system. In Fiscal Year 2005 there were a total of 169 employee and offender weather-related injuries.

Ms. Pope continues to non-concur.

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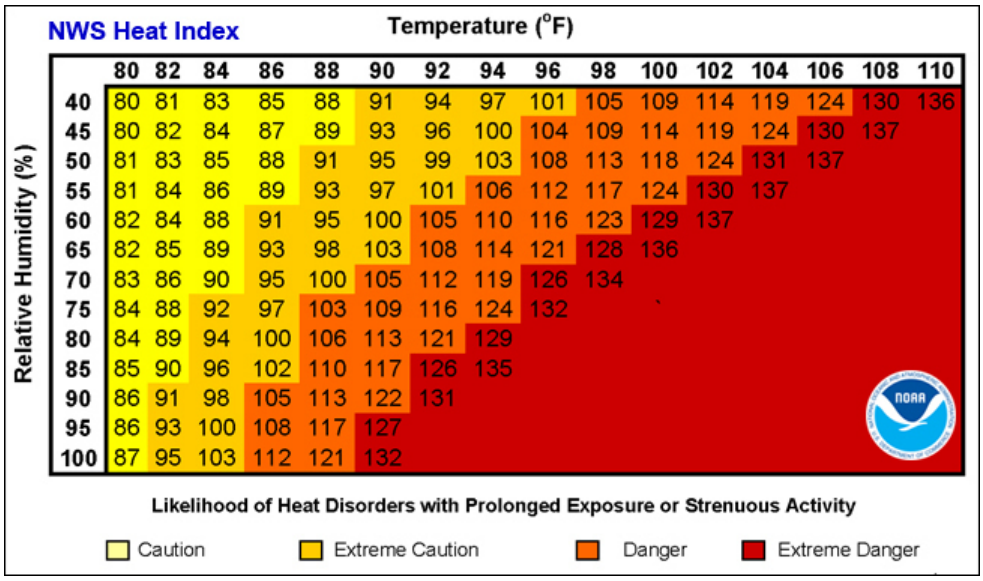
EXHIBIT 117

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



The Heat Index is a measure of how hot it really feels when relative humidity is factored in with the actual air temperature. To find the Heat Index temperature, look at the Heat Index Chart above or check our Heat Index Calculator. As an example, if the air temperature is 96°F and the relative humidity is 65%, the heat index--how hot it feels--is 121°F. The red area without numbers indicates extreme danger. The National Weather Service will initiate alert procedures when the Heat Index is expected to exceed 105°-110°F (depending on local climate) for at least 2 consecutive days.

NWS also offers a Heat Index chart for area with high heat but low relative humidity. Since heat index values were devised for shady, light wind conditions, **exposure to full sunshine can increase heat index values by up to 15°F.** Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.

Heat Safety Resources

- Heat Safety
- Maximum Heat Index Forecast
- Children, Pets and Vehicles
- Heat Awareness Campaign
- Ultraviolet (UV) Safety
- Games and Activities for Kids
- Education and Outreach
- Links, Partners

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Plaintiffs' Consolidated Summary Judgment Response Appendix

EXHIBIT 118

Local forecast by "City, St" or Zip Code
City, St Go

Search WPC
Go

NCEP Quarterly Newsletter

WPC Home
Analyses and Forecasts
National Forecast Charts
National High & Low
WPC Discussions
Surface Analysis
Days ½-2½ CONUS
Days 3-7 CONUS
Days 4-8 Alaska
QPF
PQPF
Excessive Rainfall
Mesoscale Precip Discussion
Flood Outlook
Winter Weather
Storm Summaries
Heat Index
Tropical Products
Daily Weather Map
GIS Products
Current Watches/ Warnings
Satellite and Radar Imagery
Satellite Images
National Radar
Product Archive
WPC Verification
QPF
Medium Range

The Heat Index Equation

The computation of the heat index is a refinement of a result obtained by multiple regression analysis carried out by Lans P. Rothfusz and described in a 1990 National Weather Service (NWS) Technical Attachment (SR 90-23). The regression equation of Rothfusz is

HI = -42.379 + 2.04901523*T + 10.14333127*RH - .22475541*T*RH - .00683783*T*T - .05481717*RH*RH + .00122874*T*T*RH + .00085282*T*RH*RH - .00000199*T*T*RH*RH

where **T** is temperature in degrees F and **RH** is relative humidity in percent. **HI** is the heat index expressed as an apparent temperature in degrees F. If the **RH** is less than 13% and the temperature is between 80 and 112 degrees F, then the following adjustment is subtracted from **HI**:

ADJUSTMENT = [(13-RH)/4]*SQRT{[17-ABS(T-95.)]/17}

where **ABS** and **SQRT** are the absolute value and square root functions, respectively. On the other hand, if the **RH** is greater than 85% and the temperature is between 80 and 87 degrees F, then the following adjustment is added to **HI**:

ADJUSTMENT = [(RH-85)/10] * [(87-T)/5]

The Rothfusz regression is not appropriate when conditions of temperature and humidity warrant a heat index value below about 80 degrees F. In those cases, a simpler formula is applied to calculate values consistent with Steadman's results:

HI = 0.5 * {T + 61.0 + [(T-68.0)*1.2] + (RH*0.094)}

In practice, the simple formula is computed first and the result averaged with the temperature. If this heat index value is 80 degrees F or higher, the full regression equation along with any adjustment as described above is applied.

The Rothfusz regression is not valid for extreme temperature and relative humidity conditions beyond the range of data considered by Steadman.

NOAA/ National Weather Service
National Centers for Environmental Prediction
Weather Prediction Center
5830 University Research Court
College Park, Maryland 20740
Weather Prediction Center Web Team
Page last modified: Wednesday, 28-May-2014 17:15:11 UTC

Model Diagnostics
Event Reviews
Winter Weather
International Desks
Development and Training
WPC HydroMet Testbed
Development
Experimental Products
WPC Overview
About the WPC
Mission and Vision
Staff
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Other Sites
FAQs
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Plaintiffs' Consolidated Summary Judgment Response Appendix

EXHIBIT 119

National Weather Service Weather Forecast Office

Dallas/Fort Worth, TX

Dallas/Fort Worth - Annual and Consecutive 100° Days

Click Here for Waco

Greatest Annual

Rank	# of Days	Year
1	71	2011
2	69	1980
3	56	1998
4	52	1954
5	48	1956
6	46	2000
7	44	1952
8	43	2006
9	40	1951
10	38	1963

Greatest Consecutive

Rank	# of Days	Dates
1	42	Jun 23 - Aug 3, 1980
2	40	Jul 2 - Aug 10, 2011
3	29	Jul 6 - Aug 3, 1998
4	25	Aug 2-26, 1952
5	24	Jul 28 - Aug 20, 1999
6 (tie)	20	Aug 15 - Sep 3, 2011
	20	Jul 9-28, 1954
8	19	Aug 8-26, 2006
9 (tie)	18	Jul 31 - Aug 17, 2010
	18	Jul 2-19, 1978

Least Annual

Rank	# of Days	Year
1 (tie)	0	1973
	0	1906
3 (tie)	1	2004
	1	2002
	1	1992
	1	1920
	1	1919
	1	1915
	1	1908
	1	1905
	1	1904
	1	1903

Greatest Number of Days in a Month

Rank	# of Days	Month/Year
1	31	Jul 1980
2	30	Jul 2011
3 (tie)	28	Aug 2011
	28	Jul 1998
5 (tie)	27	Aug 2000
	27	Aug 1952
7	26	Aug 1999
8 (tie)	25	Aug 2006
	25	Jul 1954
	25	Aug 1951

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